

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (original) A pad conditioner of planarization equipment for conditioning a surface of a polishing pad, comprising:

a disk holder that supports a polishing disk; and

a conditioner head to which said disk holder is mounted so as to be rotatable and linearly movable up and down, said conditioner head having a rotary driving device operatively connected to said disk holder so as to rotate said disk holder about an axis of rotation, and linear driving device operative to move the disk holder between an upper position and a lower position,

said linear driving device including a first magnet and a second magnet, said first magnet being connected to said disk holder, and said second magnetic being connected to said conditioner head opposite the first magnet, whereby the disk holder can be moved relative to the conditioner head by a magnetic force between the first and second magnets.

2. (original) The pad conditioner as recited in claim 1, wherein one of said first and second magnets is an electromagnet, and further comprising a an electric power source connected to said electromagnet.

3. (original) The pad conditioner as recited in claim 2, wherein said power source is operative to reverse the polarization of said electromagnet such that forces of repulsion and attraction can be created between the second and first magnets.

4. (original) The conditioner as recited in claim 1, wherein said conditioner head includes a housing, and further comprising a sleeve fixed to said disk holder and extending therefrom into the housing of said conditioner head, said sleeve having a central longitudinal axis coincident with the axis of rotation of said disk holder, said first magnet being fixed to said sleeve.

5. (canceled)

6. (original) The conditioner as recited in claim 1, wherein said first magnet is a permanent magnet and said second magnet is an electromagnet.

7. (currently amended) Chemical mechanical polishing equipment for use in polishing a substrate, said equipment comprising:

a polishing station including a polishing pad, a rotatable table supporting said polishing pad, and a pad conditioner for use in conditioning an upper surface of the polishing pad,

said pad conditioner comprising a disk holder that supports a polishing disk, and

a conditioner head includes a housing, ~~to which~~ said disk holder is mounted to said conditioner head so as to be rotatable and linearly movable up and down, said conditioner head having a rotary driving device operatively connected to said disk holder so as to rotate said disk holder about an axis of rotation, and linear driving device operative to move the disk holder between an upper position and a lower position,

said linear driving device including a first magnet and a second magnet, said first magnet being ~~connected~~ fixed to a top surface of said disk holder, and said second magnetic being ~~connected~~ fixed to said conditioner head a bottom surface of said housing opposite the first magnet, whereby the disk holder can be moved relative to the conditioner head by a magnetic force between the first and second magnets; and

a polishing head assembly disposed above said polishing station, said polishing head assembly including a polishing head that holds a substrate against the polishing pad.

the first magnet is fixed to a top surface of said disk holder, and the second magnet is fixed to a bottom surface of said housing.

8. (currently amended) The chemical mechanical polishing equipment as recited in claim 7, wherein one of said first and second magnets of the linear

driving device of said pad conditioner is an electromagnet, and wherein said pad conditioner further comprises an electric power source connected to said electromagnet.

9. (original) The chemical mechanical polishing equipment as recited in claim 8, wherein said power source is operative to reverse the polarization of said electromagnet such that forces of repulsion and attraction can be created between the second and first magnets.

10. (original) The chemical mechanical polishing equipment as recited in claim 7, wherein said conditioner head includes a housing, and said pad conditioner further comprises a sleeve fixed to said disk holder and extending therefrom into the housing of said conditioner head, said sleeve having a central longitudinal axis coincident with the axis of rotation of said disk holder, and said first magnet being fixed to said sleeve.

11. (canceled)

12. (new) A pad conditioner of planarization equipment for conditioning a surface of a polishing pad, comprising:

a disk holder that supports a polishing disk; and

a conditioner head including a housing to which said disk holder is mounted so as to be rotatable and linearly movable up and down, said conditioner head having a rotary driving device operatively connected to said disk holder so as to rotate said disk holder about an axis of rotation, and linear driving device operative to move the disk holder between an upper position and a lower position,

said linear driving device including a first magnet and a second magnet, said first magnet being fixed to a top surface of said disk holder, and said second magnetic being fixed to a bottom surface of said housing opposite the first magnet, whereby the disk holder can be moved relative to the conditioner head by a magnetic force between the first and second magnets.

13. (new) The pad conditioner as recited in claim 12, wherein one of said first and second magnets is an electromagnet, and further comprising a an electric power source connected to said electromagnet.

14. (new) The pad conditioner as recited in claim 13, wherein said power source is operative to reverse the polarization of said electromagnet such that forces of repulsion and attraction can be created between the second and first magnets.

15. (new) The conditioner as recited in claim 12, wherein said conditioner head includes a housing, and further comprising a sleeve fixed to said disk holder and extending therefrom into the housing of said conditioner head, said sleeve having a central longitudinal axis coincident with the axis of rotation of said disk holder, said first magnet being fixed to said sleeve.

16. (new) The conditioner as recited in claim 12, wherein said first magnet is a permanent magnet and said second magnet is an electromagnet.